

BBBBBBBBBBBBBBB AAAAAAAA SSSSSSSSSSSS RRRRRRRRRRRRR TTTTTTTTTTTTTT LLL
BBBBBBBBBBBBBBB AAAAAAAA SSSSSSSSSSSS RRRRRRRRRRRRR TTTTTTTTTTTTTT LLL
BBBBBBBBBBBBBBB AAAAAAAA SSSSSSSSSSSS RRRRRRRRRRRRR TTTTTTTTTTTTTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBBBBBBBBBBBBBB AAA AAA SSSSSSSSSS RRRRRRRRRRRRR TTT LLL
BBBBBBBBBBBBBBB AAA AAA SSSSSSSSSS RRRRRRRRRRRRR TTT LLL
BBBBBBBBBBBBBBB AAA AAA SSSSSSSSSS RRRRRRRRRRRRR TTT LLL
BBB BBB AAAAAAAAAAAAAA SSS RRR RRR TTT LLL
BBB BBB AAAAAAAAAAAAAA SSS RRR RRR TTT LLL
BBB BBB AAAAAAAAAAAAAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBB BBB AAA AAA SSS RRR RRR TTT LLL
BBBBBBBBBBBBBBB AAA AAA SSSSSSSSSSSS RRR RRR TTT LLL
BBBBBBBBBBBBBBB AAA AAA SSSSSSSSSSSS RRR RRR TTT LLL
BBBBBBBBBBBBBBB AAA AAA SSSSSSSSSSSS RRR RRR TTT LLL

FILEID**BASENDDFS

```

BBBBBBBBBB  AAAAAAA  SSSSSSSSS  EEEEEEEEEE  NN  NN  DDDDDDDDD  DDDDDDDDD  FFFFFFFFFF  SSSSSSSSS
BBBBBBBBBB  AAAAAAA  SSSSSSSSS  EEEEEEEEEE  NN  NN  DDDDDDDDD  DDDDDDDDD  FFFFFFFFFF  SSSSSSSSS
BB  BB  AA  AA  SS  EE  NN  NN  DD  DD  DD  DD  FF  SS
BB  BB  AA  AA  SS  EE  NN  NN  DD  DD  DD  DD  FF  SS
BB  BB  AA  AA  SS  EE  NNNN  NN  DD  DD  DD  DD  FF  SS
BB  BB  AA  AA  SS  EE  NNNN  NN  DD  DD  DD  DD  FF  SS
BBBBBBBBBB  AA  AA  SSSSSSS  EEEEEEEE  NN  NN  NN  DD  DD  DD  FF  SSSSSSS
BBBBBBBBBB  AA  AA  SSSSSSS  EEEEEEEE  NN  NN  NN  DD  DD  DD  FF  SSSSSSS
BB  BB  AAAAAAAA  SS  EE  NN  NNNN  DD  DD  DD  FF  SS
BB  BB  AAAAAAAA  SS  EE  NN  NNNN  DD  DD  DD  FF  SS
BB  BB  AA  AA  SS  EE  NN  NN  DD  DD  DD  FF  SS
BB  BB  AA  AA  SS  EE  NN  NN  DD  DD  DD  FF  SS
BBBBBBBBBB  AA  AA  SSSSSSS  EEEEEEEEEE  NN  NN  DDDDDDDDD  DDDDDDDDD  FF  SSSSSSS
BBBBBBBBBB  AA  AA  SSSSSSS  EEEEEEEEEE  NN  NN  DDDDDDDDD  DDDDDDDDD  FF  SSSSSSS

```

```
1 0001 0 MODULE BASSEND_DFS (
2 0002 0 IDENT = '1-004'
3 0003 0 ) =
4 0004 1 BEGIN
5
6 0006 1 ****
7 0007 1 *
8 0008 1 * COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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25 0025 1 *
26 0026 1 *
27 0027 1 ****
28 0028 1 *
29 0029 1 *
30 0030 1 *
31 0031 1 ++
32 0032 1 FACILITY: BASIC-PLUS-2 Frame Support
33 0033 1
34 0034 1 ABSTRACT:
35 0035 1
36 0036 1 These routines set up and tear down frames for BASIC-PLUS-2.
37 0037 1 Frames are used for main routines, external functions,
38 0038 1 external subroutines, internal functions (both DEFs and DEF*s)
39 0039 1 internal subroutines (GOSUBs) and condition handlers.
40 0040 1
41 0041 1 ENVIRONMENT: VAX-11 user mode
42 0042 1
43 0043 1 AUTHOR: John Sauter, CREATION DATE: 10-Oct-78
44 0044 1
45 0045 1 MODIFIED BY:
46 0046 1
47 0047 1 , : VERSION
48 0048 1
49 0049 1 1-001 - Original. This is just a skeleton.
50 0050 1 1-002 - Change LIB$S and OTS$S to STR$. JBS 21-MAY-1979
51 0051 1 1-003 - Code this routine, based on BASSEND DEF. JBS 03-AUG-1979
52 0052 1 1-004 - signal FNEWITFUN for kinds of frames that we know about, rather
53 0053 1 than simply signalling PROLOSSOR blindly. MDL 22-Feb-1984
54 0054 1 --
55 0055 1
56 0056 1
57 0057 1 <BLF/PAGE>
```

```
59      0058 1 | SWITCHES:  
60      0059 1 |  
61      0060 1 |  
62      0061 1 |  
63      0062 1 | SWITCHES ADDRESSING_MODE (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);  
64      0063 1 |  
65      0064 1 |  
66      0065 1 |  
67      0066 1 |  
68      0067 1 |  
69      0068 1 |  
70      0069 1 |  
71      0070 1 |  
72      0071 1 |  
73      0072 1 |  
74      0073 1 |  
75      0258 1 |  
76      0259 1 |  
77      0260 1 |  
78      0261 1 |  
79      0262 1 |  
80      0263 1 |  
81      0264 1 | FORWARD ROUTINE  
82      0265 1 |  
83      0266 1 |  
84      0267 1 |  
85      0268 1 |  
86      0269 1 |  
87      0270 1 |  
88      0365 1 |  
89      0366 1 |  
90      0569 1 |  
91      0570 1 |  
92      0654 1 |  
93      0655 1 |  
94      0656 1 |  
95      0657 1 |  
96      0658 1 |  
97      0659 1 |  
98      0660 1 |  
99      0661 1 |  
100     0662 1 |  
101     0663 1 |  
102     0664 1 |  
103     0665 1 |  
104     0666 1 |  
105     0667 1 |  
106     0668 1 |  
107     0669 1 |  
108     0670 1 |  
109     0671 1 |  
110     0672 1 |  
111     0673 1 |  
112     0674 1 |  
113     0675 1 |  
114     0676 1 |  
115     0677 1 |  
      SWITCHES:  
      SWITCHES ADDRESSING_MODE (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);  
      LINKAGES:  
      LINKAGE  
      BASSINIT_LINK = JSB (REGISTER = 0, REGISTER = 1, REGISTER = 2) : !  
      GLOBAL (BSFSA_MAJOR_STG = 11, BSFSA_MINOR_STG = 10, BSFSA_TEMP_STG = 9) !  
      NOPRESERVE (8, 7, 6, 5, 4, 3, 2, 1, 0);  
      REQUIRE 'RTLIN:STRLNK'; ! String facility linkages  
      TABLE OF CONTENTS:  
      FORWARD ROUTINE  
      BASSEND_DFS_R8 : NOVALUE BASSINIT_LINK; ! end DEF*  
      INCLUDE FILES:  
      REQUIRE 'RTLIN:RTLPSECT'; ! macros for defing psects  
      REQUIRE 'RTLIN:BASFRAME'; ! Define frame structure  
      REQUIRE 'RTLIN:BASINARG'; ! Define argument list  
      MACROS:  
      NONE  
      EQUATED SYMBOLS:  
      NONE  
      PSECTS:  
      DECLARE_PSECTS (BAS); ! declare psects for BASS facility  
      OWN STORAGE:  
      NONE  
      EXTERNAL REFERENCES:  
      EXTERNAL ROUTINE  
      BASS$STOP : NOVALUE, ! signals error  
      STR$FREE1_DX_R4 : STR$JSB_GETFRE, ! Deallocate a string
```

```
: 116      0678 1  BAS$UNWIND : NOVALUE,  
: 117      0679 1  BAS$HANDLER;  
: 118      0680 1  ! Unwind a frame  
: 119      0681 1  ! Marker for BASIC frame  
: 120      0682 1  !+ The following are the error codes used in this module.  
: 121      0683 1  !-  
: 122      0684 1  EXTERNAL LITERAL  
: 123      0685 1  BAS$K_RETWITGOS : UNSIGNED (8);  
: 124      0686 1  BAS$K_PROLOSSOR : UNSIGNED (8);  
: 125      0687 1  BAS$K_NOTIMP : UNSIGNED (8);  
: 126      0688 1  BAS$K_FNEWITFUN : UNSIGNED (8);  
: 127      0689 1  BAS$K_ERRTRANEE : UNSIGNED (8);  
: 128      0690 1  ! RETURN without GOSUB  
: 129      0691 1  ! Program lost, sorry  
:                  ! Not implemented  
:                  ! FNEND without FUNCTION CALL  
:                  ! ERROR trap needs RESUME
```

```
131 0692 1 GLOBAL ROUTINE BASSEND_DFS_R8 (
132 0693 1      ARGLIST
133 0694 1      ) : NOVALUE BASSINIT_LINK =
134 0695 1
135 0696 1      ++
136 0697 1      FUNCTIONAL DESCRIPTION:
137 0698 1
138 0699 1      Tear down a frame for a BASIC-PLUS-2 DEF*.
139 0700 1      All heap storage is deallocated. The argument is the same
140 0701 1      as for BASSINIT_DFS_R8, for validity checking.
141 0702 1
142 0703 1      FORMAL PARAMETERS:
143 0704 1
144 0705 1      ARGLIST.ra.v List of information used to set up the
145 0706 1      frame. See BASIC-PLUS-2/VAX Description
146 0707 1      of Generated Code for details.
147 0708 1
148 0709 1      IMPLICIT INPUTS:
149 0710 1      The frame, as set up by BASSINIT_DFS_R8.
150 0711 1
151 0712 1      IMPLICIT OUTPUTS:
152 0713 1
153 0714 1      NONE
154 0715 1
155 0716 1      ROUTINE VALUE:
156 0717 1
157 0718 1      NONE
158 0719 1
159 0720 1      COMPLETION CODES:
160 0721 1
161 0722 1      NONE
162 0723 1
163 0724 1
164 0725 1
165 0726 1
166 0727 1      SIDE EFFECTS:
167 0728 1
168 0729 1
169 0730 1
170 0731 2      Deallocates the heap storage local to this DEF*.
171 0732 2
172 0733 2      --
173 0734 2      BEGIN
174 0735 2
175 0736 2      EXTERNAL REGISTER
176 0737 2      BSFSA_MAJOR_STG : REF BLOCK [0, BYTE],
177 0738 2      BSFSA_MINOR_STG : REF BLOCK [0, BYTE],
178 0739 2      BSFSA_TEMP_STG : REF VECTOR;
179 0740 2
180 0741 2      BUILTIN
181 0742 2      FP;
182 0743 2
183 0744 2      MAP
184 0745 2      ARGLIST : REF BLOCK [0, BYTE] FIELD (BASSINIT_ARGS);      ! arg list
185 0746 2
186 0747 2      REGISTER
187 0748 2      FMP : REF BLOCK [0, BYTE] FIELD (BSF$FCD), ! pointer to FCD
188 0749 2      PREV_FMP : REF BLOCK [0, BYTE] FIELD (BSF$FCD); ! previous FCD
189 0750 2
190 0751 2      !+
```

```
188      0749 2 | First cut back any GOSUB frames. We wish to make the presence of
189      0750 2 | the GOSUB frame invisible except on traceback.
190      0751 2 | - FMP = .FP;
191      0752 2 | - WHILE (.FMP [BSF$B_PROC_CODE] EQL BSF$K_PROC_GOSB) DO
192      0753 2 | - BEGIN
193      0754 2 | -+ We have a GOSUB frame, remove it. Note we do not restore any
194      0755 2 | - registers it might have saved.
195      0756 2 | - BASS$UNWIND (.FMP);
196      0757 2 | - PREV_FMP = .FMP [BSF$A_SAVED_FP];
197      0758 2 | - IF (.PREV_FMP [BSF$A_HANDLER] NEQA BASS$HANDLER)
198      0759 2 | - THEN
199      0760 2 | -+ The previous frame is not a BASIC frame. This is unreasonable
200      0761 2 | - since GOSUBs should only be callable from inside a BASIC main
201      0762 2 | - procedure.
202      0763 2 | - BASS$STOP (BASS$K_RETWITGOS);
203      0764 2 | - FMP = .PREV_FMP;
204      0765 2 | - END;
205      0766 2 |+ Make sure this is a DEF frame.
206      0767 2 |+ CASE .FMP [BSF$B_PROC_CODE] FROM BSF$K_PROC_MAIN TO BSF$K_PROC_IOL OF
207      0768 2 |+ SET
208      0769 2 |+ [BSF$K_PROC_ONER] :
209      0770 2 |+ BASS$STOP (BASS$K_ERRTRANEE);
210      0771 2 |+ [BSF$K_PROC_DEFS] :
211      0772 2 |+ BEGIN
212      0773 2 |+ 0
213      0774 2 |+ END;
214      0775 2 |+ [BSF$K_PROC_MAIN, BSF$K_PROC_SUB, BSF$K_PROC_DEF] :
215      0776 2 |+ BASS$STOP (BASS$K_FNEWITFON);
216      0777 2 |+ [INRANGE, OUTRANGE] :
217      0778 2 |+ BASS$STOP (BASS$K_PROLOSSOR);
218      0779 2 |+ TES;
219      0780 2 |+ Check to be sure that this is the correct exit. This should
220      0781 2 |+ only fail if the user branches from one DEF* into the body of
221      0782 2 |+ another.
222      0783 2 |+ IF (.FMP [BSF$A_INIT_ARG] NEQA .ARGLIST)
223      0784 2 |+ THEN
224      0785 2 |+ !+
```

```

245 0806 2 ! The argument lists are not at the same address. This exit must not
246 0807 2 correspond to the entry. Signal an error.
247 0808 2
248 0809 2     BASS$STOP (BASSK_FNEWITFUN);
249 0810 2
250 0811 2+
251 0812 2| Deallocate any temporary string storage.
252 0813 2-
253 0814 2
254 0815 2| INCR COUNTER FROM 1 TO .ARGLIST [BASSL_IN NO TST] DO
255 0816 2|     STR$FREE1_DX_R4 (BSFSA_TEMP_STG [(.COUNTER - 1)*2]);
256 0817 2
257 0818 2+
258 0819 2| Deallocate local dynamic strings.
259 0820 2-
260 0821 2
261 0822 2| INCR COUNTER FROM 1 TO .ARGLIST [BASSW_IN NO_DST] DO
262 0823 2|     STR$FREE1_DX_R4 (.FMP [BSFSA_STR_DESC] +-(2*%UPVAL*(.COUNTER - 1)));
263 0824 2
264 0825 2+
265 0826 2| All done. The 'RET' instruction done by the compiled code
266 0827 2| will cut back the stack, so we don't need to do it here.
267 0828 2-
268 0829 2|     FP = .FMP;
269 0830 2|     RETURN;
270 0831 1|     END;

```

! of BAS\$END_DFS_R8

```

.TITLE BAS$END_DFS
.IDENT \1-004\

.EXTRN BASS$STOP, STR$FREE1_DX_R4
.EXTRN BASS$UNWIND, BASSHANDLER
.EXTRN BASSK_RETWITGOS
.EXTRN BASSK_PROLOSSOR
.EXTRN BASSK_NOTIMP, BASSK_FNEWITFUN
.EXTRN BASSK_ERRTRANEE

.PSECT _BASS$CODE.NOWRT, SHR, PIC,2

```

	57	50	DO 00000 BAS\$END_DFS_R8::		
	55	E5	5D 00 0003 1\$:	MOVE	0692
	06		A5 91 00006 1\$:	MOVL	0752
			29 12 0000A	CMPB	0754
			55 DD 0000C	BNEQ	
00000000G	00		01 FB 0000E	PUSHL	0760
	52	0C	A5 D0 00015	CALLS	#1, BASS\$UNWIND
	50	00000000G	00 9E 00019	MOVL	12(FMP), PREV_FMP
	50		62 D1 00020	MOVAB	BASSHANDLER, R0
			0B 13 00023	CMPL	(PREV_FMP), R0
00000000G	7E	00G	8F 9A 00025	BEQL	2\$
	00		01 FB 00029	MOVZBL	#BASSK_RETWITGOS, -(SP)
	55		52 D0 00030 2\$:	CALLS	#1, BASS\$STOP
			D1 11 00033	MOVL	PREV_FMP, FMP
001C	07	01	E5 A5 8F 00035 3\$:	BRB	1\$
0010	001C	001C	0003A 4\$:	CASEB	-27(FMP), #1, #7
				.WORD	7\$-4\$,-

0010	0016	0010	0027	00042			
					7\$-4\$,-		
					5\$-4\$,-		
					7\$-4\$,-		
					9\$-4\$,-		
					5\$-4\$,-		
					6\$-4\$,-		
					5\$-4\$		
			7E	00G 8F 9A 0004A 5\$:	MOVZBL #BASSK_PROLOSSOR, -(SP)	0794	
			7E	00G 8F 9A 00050 6\$:	BRB 8\$ #BASSK_ERRTRANEE, -(SP)	0783	
		00000000G	7E 00 57	00G 8F 9A 00056 7\$:	MOVZBL #BASSK_FNEWITFUN, -(SP)	0791	
			00	01 FB 0005A 8\$:	CALLS #1, BASSSTOP		
			57	D8 A5 D1 00061 9\$:	CMPL -40(FMP), ARGLIST	0803	
				0B 13 00065	BEQL 10\$		
		00000000G	7E 00	00G 8F 9A 00067 10\$:	MOVZBL #BASSK_FNEWITFUN, -(SP)	0809	
				01 FB 0006B	CALLS #1, BASSSTOP		
				56 D4 00072	CLRL COUNTER	0816	
				0F 11 00074	BRB 12\$		
		50		56 01 78 00076 11\$:	ASHL #1, COUNTER, R0		
				50 F8 A940 DE 0007A	MOVAL -8(BSFSA TEMP STG)[R0], R0		
		EC	00000000G	00 16 0007F	JSB STR\$FREE1 DX_R4		
			56 30 A7 F3 00085 12\$:	AOBLEQ 48(ARGLIST), COUNTER, 11\$	0822		
			57 28 A7 3C 0008A	MOVZWL 40(ARGLIST), R7	0823		
				56 D4 0008E	CLRL COUNTER		
				0E 11 00090	BRB 14\$		
			50 E0 B546 7E 00092 13\$:	MOVAQ a-32(FMP)[COUNTER], R0			
			50 08 C2 00097	SUBL2 #8, R0			
		EE	00000000G	00 16 0009A 14\$:	JSB STR\$FREE1 DX_R4		
			56 57 F3 000A0	AOBLEQ R7, COUNTER, 13\$			
			5D 55 D0 000A4	MOVL FMP, FP			
			05 000A7	RSB			

: Routine Size: 168 bytes, Routine Base: _BASS\$CODE + 0000

: 271 0832 1
: 272 0833 1 END
: 273 0834 1
: 274 0835 0 ELUDOM

PSECT SUMMARY

Name	Bytes	Attributes
_BASS\$CODE	168	NOVEC,NOWRT, RD, EXE, SHR, LCL, REL, CON, PIC,ALIGN(2)

COMMAND QUALIFIERS

: BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LISS:BASENDDFS/OBJ=OBJ\$:BASENDDFS MSRC\$:BASENDDFS/UPDATE=(ENH\$:BASENDDFS
:)

: Size: 168 code + 0 data bytes
: Run Time: 00:06.1
: Elapsed Time: 00:16.1
: Lines/CPU Min: 8226
: Lexemes/CPU-Min: 29349
: Memory Used: 70 pages
: Compilation Complete

0022 AH-BT13A-SE
VAX/VMS V4.0

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